STATE OF NEW YORK

PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act

Case No. 20-E-0197

Petition Requesting Designation of Certain Transmission Investments as a Priority Transmission Project

January 24, 2025

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The Accelerated Renewable Energy Growth and Community Benefit Act (the Accelerated Renewable Act) was signed into law in April 2020 and established, among other things, a Priority Transmission Project (PTP) process for constructing new, expanded, and upgraded bulk transmission infrastructure[1] needed on an "expeditious" basis to access and deliver renewable energy resources.[2] In enacting the Accelerated Renewable Act, the Legislature recognized that the New York Power Authority (NYPA) is uniquely positioned to expeditiously develop bulk transmission projects.[3] The PTP process plays an important role in the ability of the State and its private sector partners to achieve the ambitious goals of the Climate Leadership and Community

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1 Bulk transmission is generally defined as electricity transmission infrastructure operated at 230 kilovolts (kV) or higher.

2 L. 2020, Ch. 58, Part JJJ, Section 7(5).

3 The Legislature also recognized the value in partnering with other developers and, thus, directed NYPA to solicit interest in the potential joint development of PTP projects to determine whether such joint development would provide significant additional benefits in achieving the CLCPA mandates. Accelerated Renewable Act, Section 7(5). Upon the designation of the Project as a PTP, NYPA intends to issue a competitive solicitation seeking a potential partner to co-develop the Clean Path Transmission Project.

Protection Act (CLCPA),[4] ensure the State's electric system remains reliable, and timely meet the growing demand for electricity to support New York's economic renaissance.

This Petition requests that the New York State Public Service Commission (the Commission) designate the Clean Path Transmission Project (also referred to herein as the Project) as a PTP to accelerate its development and address the State's need for additional bulk transmission investments to deliver renewable energy to support the decarbonization of the electric system in downstate New York. It is well-recognized that decarbonization of the electric system in downstate New York – particularly New York City – is critical to achieving the CLCPA goals.[5]

The New York Independent System Operator, Inc. (NYISO) has identified reliability deficiencies in New York City beginning in 2025,[6] and transmission security deficiencies in New

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4 L. 2019, Ch. 106.

5 See, e.g., Case 15-E-0302, Implementation of a Large-Scale Renewable Program and a Clean Energy Standard, White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act (issued June 18, 2020) (June 2020 White Paper), p. 45. The White Paper, filed jointly by Department of Public Service Staff (DPS Staff) and the New York State Energy Research and Development Authority (NYSERDA) explained that the CLCPA target requiring 70 percent of electricity to be generated from renewable resources by 2030 (70x30 Target) will be difficult to achieve "[w]ithout displacing a substantial portion of the fossil fuel-fired generation currently operating within Zone J" and thus identified the need to increase "the penetration of renewable energy consumed in the downstate region of the State" as a "central challenge in achieving the 70 by 30 Target."

6 NYISO Short-Term Assessment of Reliability: 2023 Quarter 2 Report (dated July 14, 2023) (NYISO STAR 2023 Q2 Report), https://www.nyiso.com/documents/20142/16004172/2023-Q2-STAR-Report-Final.pdf. The NYISO's quarterly reports issued since have consistently reiterated this reliability concern. See, e.g., NYISO Short-Term Assessment of Reliability: 2024 Quarter 3 (dated October 11, 2023), pp. 4-5, 24-26.

York City starting in 2033.[7] With respect to growing demand, the State's Clean Heat Program and New York City's Climate Mobilization Act (particularly Local Law 97 of 2019) are expected to significantly increase the demand for electricity downstate, and it is imperative that there is sufficient clean energy supply to satisfy this demand. Given this need, coupled with the CLCPA's mandate to reduce greenhouse gas emissions and improve air quality, additional transmission to deliver upstate fossil-free generation downstate is needed as soon as possible.

The Commission's designation of the Project as a PTP will accelerate its development to address these important transmission and resource needs expeditiously. First, the Project will enable delivery of carbon-free power to New York City beginning in 2029 and support the reduced reliance on fossil-fueled generating facilities within New York City, which will lower particulate air emissions, improve air quality, and provide public health benefits within New York City. By providing a new pathway from upstate to downstate that bypasses the congestion on the bulk transmission system, the Project will simultaneously minimize curtailments of upstate renewable resources and enhance the resilience of the State's transmission system.

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[7] The NYISO has completed its Reliability Needs Assessment (RNA) for the period 2028 through 2034. The results show a New York City transmission security deficiency of 17 MW in 2033, increasing to 97 MW in 2034 in the base case, with higher resource deficiencies in the high demand case. The NYISO stated its concern that "[t]he findings are impacted by significant uncertainties associated with future demand growth and changing supply mix such that any additional change could result in the identification of further Reliability Needs through the NYISO reliability planning processes." NYISO 2024 RNA (issued November 19, 2024), p. 6. https://www.nyiso.com/documents/20142/2248793/2024-RNA-Report.pdf/0fe6fd1e-0f28-0332-3e80-28bea71a2344?t=1732195607468.

Second, adding the ability to transmit capacity and energy into New York City will help address downstate reliability concerns[8] and reduce the need to rely on more expensive local capacity to meet the Locational Minimum Installed Capacity Requirement (LCR) for Zone J.[9] Third, because the Project will be controllable and capable of bidirectional[10] operation, it will also support the upstate power grid by flowing power from downstate to upstate during periods of excess supply from offshore wind facilities that are currently under development.

For all these reasons, expedited development of the Clean Path Transmission Project is critical to advancing the State's achievement of the aggressive CLCPA mandates. The Commission should designate the Clean Path Transmission Project as a PTP under Section 7(5) of the Accelerated Renewable Act and refer the Project to NYPA for immediate development.

I. Background

A. Statutory Authority

The Accelerated Renewable Act was established to improve the siting and construction of large-scale renewable energy projects in support of the State's achievement of the CLCPA

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[8] The Champlain Hudson Power Express (CHPE) Project is considered to be the primary source of new capacity to address the NYISO-identified 2025 reliability need in New York City. However, the NYISO's 2024 RNA identifies a reliability need in NYC in 2033 even with CHPE operational. The Clean Path Transmission Project may alleviate that need in addition to offering a winter reliability benefit when CHPE will not provide capacity pursuant to the terms of its Tier 4 contract with the NYSERDA.

[9] Since the NYISO rules for high voltage direct current (HVDC) transmission lines are under development, NYPA anticipates that the Project's 1,300 MW would reduce the New York City LCR, as would be the case for high voltage alternating current (HVAC) transmission, as opposed to the alternative of having capacity deliverability rights assigned to the line. Either market design would reduce New York City's capacity market costs to the benefit of ratepayers.

[10] NYPA will submit a new interconnection request with the NYISO for bi-directional operation upon approval of the PTP.

Targets.[11] Recognizing that the energy generated from these projects would require reliable and effective transmission, the Accelerated Renewable Act also accelerated the development of new, expanded and upgraded distribution and transmission investments needed to access and deliver renewable energy across the State.[12] The Accelerated Renewable Act directed the Commission to establish planning and investment programs to identify projects that "are necessary or appropriate to achieve the CLCPA Targets."[13]

The Accelerated Renewable Act identifies two avenues for advancing bulk transmission investments to meet the CLCPA mandates and other policy goals. The Accelerated Renewable Act directs the Commission to refer to NYPA "those projects for which the Commission has determined there is a need to proceed expeditiously to promote the [S]tate's public policy goals"[14] and to submit other "necessary" projects to the Public Policy Transmission Planning Process administered by the State's grid operator, the NYISO, pursuant to its Open Access Transmission Tariff (OATT).[15]

Section 7(5) of the Accelerated Renewable Act further clarifies NYPA's role in implementing PTPs as follows:

> The Legislature further finds and determines that [NYPA] owns and operates backbone electric transmission assets in New York, has rights-of-way that can support in whole or in part bulk transmission investment projects, and has the financial stability, access to capital, technical expertise and experience to effectuate

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[11] The CLCPA requires: (i) a 40% reduction in greenhouse gas emissions from 1990 levels by 2030; (ii) an 85% reduction in greenhouse gas emissions from 1990 levels by 2050; (iii) 70% of the State's electricity production from renewable resources by 2030 (70x30 Target); (iv) a 100% emissions-free electric demand system by 2040; (v) at least 9,000 MW of offshore wind by 2035; (vi) 6,000 MW of photovoltaic solar generation by 2025; and (vii) 3,000 MW of energy storage resources by 2030 (collectively referred to as the CLCPA Targets).

[12] Accelerated Renewable Act §§ 7(4), (5).

[13] Accelerated Renewable Act § 7(3).

[14] Accelerated Renewable Act § 7(5).

[15] Accelerated Renewable Act § 7(4).

> expeditious development of bulk transmission investments needed to help the state meet the CLCPA [T]argets, and thus it is appropriate for [NYPA] . . . by itself or in collaboration with other parties as it determines to be appropriate, to develop those bulk transmission investments found by the commission to be needed expeditiously to achieve CLCPA [T]argets.[16]

The statute requires the Commission to identify bulk transmission investments that are "needed expeditiously" to advance the State's goals and identifies NYPA as the appropriate entity to undertake the development and construction of those investments. The Accelerated Renewable Act affords the Commission discretion in determining the process and criteria for designating the transmission investments that are "necessary or appropriate" to meeting the CLCPA goals and then prioritizing the development of those PTPs.

B. The Commission's Evaluation Criteria for Priority Transmission Projects

In its October 15, 2020, Order on Priority Transmission Projects, the Commission identified the criteria it will apply to determine whether a bulk transmission investment qualifies as a PTP under the Accelerated Renewable Act.[17] There are two primary factors the Commission will consider in evaluating whether an investment is needed "expeditiously" to advance the State's CLCPA goals.

The first criterion the Commission will consider in its evaluation is the transmission investment's potential for unbottling both existing renewable generation, as well as planned generation projects that are in the NYISO interconnection process, thereby reducing the amount of new generation needed to meet the CLCPA Targets.[18] In recognition of the importance of fully realizing the investments associated with existing generation resources, the Commission

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[16] Accelerated Renewable Act § 7(5).

[17] Case 20-E-0197, supra, Order on Priority Transmission Projects (issued October 15, 2020) (PTP Order), pp. 17-18.

[18] Id. at 17.

identified the deliverability of existing generation as "a key and perhaps determinative factor for this analysis."[19] The Commission also acknowledged the benefit in resolving transmission constraints for generation in the NYISO planning queue as such projects are not speculative. While not itself an indicator that a project is needed "expeditiously," a project's likelihood to facilitate development of planned generation projects will be given some weight.[20]

The second criterion the Commission will consider is whether the project would enhance the value of recent, ongoing or anticipated distribution, local transmission and/or bulk transmission investments, and/or help the State realize benefits from such investments because it can be placed in service sooner as a PTP than through the NYISO's Public Policy Transmission Planning Process.[21] In the context of this evaluation, the Commission will consider the ability of NYPA to expedite project development through its control of the necessary rights-of-way, access to other project real estate, and the availability of capital.[22]

The Commission declined to establish additional criteria in the PTP Order; however, the Commission recognized that future PTP applications would benefit from an enhanced evaluation process. Accordingly, the Commission identified certain information and analyses that NYPA should provide in support of future PTP applications. The Commission encouraged NYPA to submit engineering and economic analyses akin to those required in the NYISO's Public Policy Transmission Planning Process to provide transparency to customers with respect to the cost impact of such investments.[23] The Commission also encouraged NYPA to provide detailed cost allocation and recovery analyses in future petitions, including a cost containment/risk-sharing

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19 Id. at 16.

20 Id. at 17.

21 Id. at 18.

22 Id. at 19.

23 Id. at 22.

mechanism. Lastly, the Commission urged NYPA to consult with affected local transmission owners to develop cost estimates for any necessary local system upgrades associated with future PTPs.

1. Competitive Bidding Mandate

The Accelerated Renewable Act requires NYPA, as deemed feasible and advisable by its Board of Trustees, to employ competitive bidding to select private sector participants to develop projects that are not "substantially within" its existing rights-of-way.[24] In the PTP Order, the Commission noted that the Accelerated Renewable Act "leaves the criteria for selecting a project partner up to NYPA, and [the Commission] expect[s] NYPA to develop those criteria in light of the Act's objectives."[25]

A key reason the Clean Path Transmission Project can be expedited is its use of existing rights of way along the route. For this Project, approximately 95 of the 178 miles of transmission line will be located within NYPA's existing rights-of-way and the two converter stations will be constructed on NYPA property. Although the Clean Path Transmission Project will be "substantially" within NYPA's existing rights-of-way under New York precedent,[26] NYPA intends to issue an open, competitive solicitation to evaluate developer interest in the

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[24] Accelerated Renewable Act § 7(5).

[25] PTP Order, p. 29.

[26] See Williams v. Beemiller, Inc., 159 A.D.3d 148, 154-155 (4th Dep't 2018), aff'd, 33 N.Y.3d 523 (2019) (defining the "substantial" revenue requirement satisfied where 34 percent of defendant's guns were sold in New York as a proportion of his total guns sold). New York State agencies have issued rules defining "substantial" as 40 percent or more. See, e.g., City of New York v. Les Hommes, 94 N.Y.2d 267, 271 (1999) (defining the "substantial portion" component of the test to deem a commercial establishment "adult entertainment" as "at least 40 percent" of the store's stock comprising of adult materials) and Cronk v. King, 130 A.D.3d 1415, 1417 (3d Dep't 2015) (defining the "substantial portion of time" component of the test to evaluate teacher seniority to mean "40% or more" of that teacher's time spent in a designated tenure area).

Project to determine whether joint development would provide significant additional benefits for purposes of achieving the CLCPA Targets.

C. The Immediate Need for Upstate to Downstate Transmission

The existing bulk transmission system consists of transmission lines from the western part of New York across the State to the Capital Region and down through the Hudson Valley to New York City and from the State's northern border through the Utica/Rome area, connecting to the east/west corridor and continuing south towards New York City. There are several branches of the bulk transmission system that extend to Oswego and the Southern Tier. At present, there is one primary pathway from the western part of the State to the Utica/Rome area, and then two primary pathways from that area towards New York City.

There are a series of interfaces on the bulk transmission system that are a function of its original design and configuration. While these interfaces limit the amount of power that can flow across the system, directly upgrading the interfaces to mitigate these flow constraints is complex and costly. Several recent transmission projects have eased the constraints from the Utica area to the Capital District and into the Hudson Valley.[27] This, in turn, has pushed the congestion bottleneck to the lower Hudson Valley and closer to New York City. In addition, preliminary forecasts developed for Stage 1 of the Coordinated Grid Planning Process indicate that expected future upstate renewable generation will grow to a total of nearly 15,770 MW of land-based wind and more than 42,000 MW of utility-scale solar,[28] which will result in material constraints along these pathways.

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[27] These include NYPA's Smart Path, Smart Path Connect and Central East Energy Connect projects.

[28] Case 20-E-0197, supra, August 22, 2024 NYISO Presentation on Coordinated Grid Planning Process: Summary of Stage 1 Capacity Expansion Analysis Results (filed August 28, 2024), slide 27.

Separately, there are significant differences in the composition of the upstate and downstate power grids – often referred to by the NYISO as the "Tale of Two Grids."[29] The upstate grid is comprised predominantly of carbon-free sources of electricity, including wind, solar, hydro, and nuclear facilities. In contrast, the downstate grid is comprised almost entirely of fossil fuel-fired electric generation. While some renewable energy flows from upstate to downstate, transmission constraints on the bulk transmission system limit the amount of renewable energy that can reach the downstate areas, leaving New York City heavily reliant on fossil fuel-fired generation.[30]

The Commission is well aware of the issues associated with the adequacy of the existing transmission system[31] and the need to address transmission constraints between upstate and downstate to support achievement of the State's policy goals.[32] In the CES Modification Order, the Commission affirmed the need for up to 3,000 MW of additional renewable energy sources delivered into Zone J to reduce New York City's reliance on fossil fuel generation.[33] The Commission stated:

> Transmission constraints and a lack of adequate sites have made New York City uniquely reliant on fossil fuel-fired generation. Among

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[29] The NYISO first introduced this term in its 2017 Power Trends Report. NYISO Power Trends 2017: New York's Evolving Electric Grid (issued May 18, 2017), pp. 8, 11, and 40, https://www.nyiso.com/documents/20142/2223020/2017-Power-Trends.pdf/7baea2ba-cdca-93a6-2e45-4d948383ccbd.

[30] The Commission recognized the need to address transmission constraints to increase the penetration of renewable energy into New York City when it established Tier 4. See Case 15-E-0302, Order Adopting Modifications to the Clean Energy Standard (issued October 15, 2020) (CES Modification Order), p. 80.

[31] See Case 20-E-0197, supra, Initial Report on the New York Power Grid Study (filed January 19, 2021).

[32] Id. See also June 2020 White Paper, pp. 45-46 (DPS Staff and NYSERDA concluded that "without new transmission capacity, the addition of new upstate renewables will not on its own increase the penetration of renewable energy consumed in the New York City to a level that enables statewide compliance with the 70 by 30 Target").

[33] CES Modification Order, p. 94.

> existing CES programs, only the Offshore Wind Standard holds the promise of reducing New York City's reliance on fossil-fuel fired generation on the necessary scale. However, the Commission believes that it would be imprudent, at this time, to rely exclusively on the Offshore Wind Standard to achieve this purpose. Resource diversity concerns may, in time, counsel against exclusive reliance on offshore wind to reduce the use of fossil fuel-fired generation in Zone J.[34]

As recognized by the Commission, access to diverse generation resources facilitates reliability, resilience and lower prices for electricity. This is critical for New York City given its dense urban environment with millions of residents and thousands of businesses. Competition between resources helps to keep energy costs down for residents, including large numbers of disadvantaged communities struggling with energy insecurity. In addition, New York City is a financial center for the country and the world, with financial markets and institutions reliant on reliable, affordable electricity to provide these critical services and remain competitive.

Resource diversity has always been important, and, for this reason, New York City has never relied on a single technology or fuel source for electric generation. Dual-fuel requirements have long existed for fossil plants, and the fuel for those plants has historically been sourced from multiple geographically diverse production areas. As the State transitions away from fossil fuels, the need to maintain resource diversity remains, and the Commission is correct in stating that it would be imprudent to rely solely on any one resource – in this case, offshore wind generation or the CHPE project – to satisfy New York City's substantial and growing demand for electricity.

II. The Clean Path Transmission Project

The Clean Path Transmission Project is the transmission portion of the Clean Path New York Project that was the subject of the Tier 4 contract between Clean Path New York LLC and

[34] Id. at 80.

NYSERDA. On November 27, 2024, NYSERDA notified the Commission that the Tier 4 contract had been terminated.[35] Although the contract has been terminated, the need for additional transmission between upstate production areas and downstate load centers to facilitate CLCPA compliance remains such that the Project should be designated as a PTP.

The Project is an approximately 178-mile-long 1,300 MW HVDC transmission line that will run from a point of interconnection (POI) at the Fraser Substation in Delaware County to a POI located at the Rainey Substation in Queens. Specifically, the Project includes: an approximately 178-mile-long underground/submarine ±400kV, 1,300 MW HVDC transmission line; a converter station located in Delaware County (Northern Converter Station), with an approximately one-mile-long underground 345 kV HVAC transmission line to the POI at Fraser; and a converter station located at the Astoria energy complex in Queens (Southern Converter Station), with an approximately three-mile-long underground 345 kV HVAC transmission line to the POI at the Rainey Substation in Queens.

The Project will bypass the four existing interfaces on the bulk transmission system and deliver fossil-free energy directly into the New York City load center. There is no generation associated with the Project, and the energy transmitted over the Project would be economically dispatched by the NYISO as part of its overall operation of the State's transmission system. The Project will be capable of delivering upstate renewable resources to the heart of the New York City load center and facilitating the integration of offshore wind into the electric system through south-to-north flows. By increasing the availability of carbon-free resources to serve downstate load, the Clean Path Transmission Project will advance the State towards achievement of the CLCPA's clean energy goals. NYPA submits that the Commission's findings in its Order

[35] Case 15-E-0302, supra, Notice of Mutual Termination (filed November 27, 2024).

approving the Tier 4 contracts remain applicable and should be considered as evidence of the merits of the Project.[36]

A. Description of the Clean Path Transmission Project

The Clean Path Transmission Project is a 178-mile long +/- 400 kV HVDC Transmission line that consists of the following components:

- An underground transmission line that begins at a converter station in Delaware County. It follows existing rights-of-way (ROWs) owned or controlled by NYPA, New York State Electric & Gas Corporation (NYSEG), Metropolitan Transportation Authority (MTA) Metro-North Railroad, New York State Department of Transportation (NYSDOT), and New York City Department of Transportation (NYCDOT) for 131 miles, terminating at a converter station in Queens;
- A submarine transmission line within the Hudson, Harlem, and East Rivers for 47 miles;
- Six landfalls where the transmission line either enters or exits the Hudson, Harlem, and East Rivers: Newburgh-Beacon Bridge Landfall; Charles Point Landfall; Croton Point Landfall; two Randall's Island Landfalls (East and West); and Lawrence Point Landfall;
- A converter station located in Delaware County (Northern Converter Station), with an approximately one-mile-long underground 345-kV HVAC transmission line following existing NYPA and NYSEG ROW to the POI at Fraser; and
- A converter station located at the Astoria energy complex in Queens (Southern Converter Station), with an approximately three-mile-long underground 345-kV HVAC transmission line following existing NYCDOT ROW to the POI at Rainey.

1. Description of the Proposed Transmission Line

The Clean Path Transmission Project will include three different cable types: underground HVDC cable, submarine HVDC cable, and underground HVAC cable. The HVDC cable systems will connect the two converter stations. As outlined below, HVDC underground cable will be used for most of the route (approximately 127 miles), and the remaining submarine

[36] See Case 15-E-0302, supra, Order Approving Contracts for the Purchase of Tier 4 Renewable Energy Certificates (issued April 14, 2022).

segments (approximately 47 miles) will use HVDC submarine cable. HVAC underground cables will be used to connect the converter stations to their respective POIs at existing electrical substations (Fraser and Rainey). The segments of the transmission line are as follows:

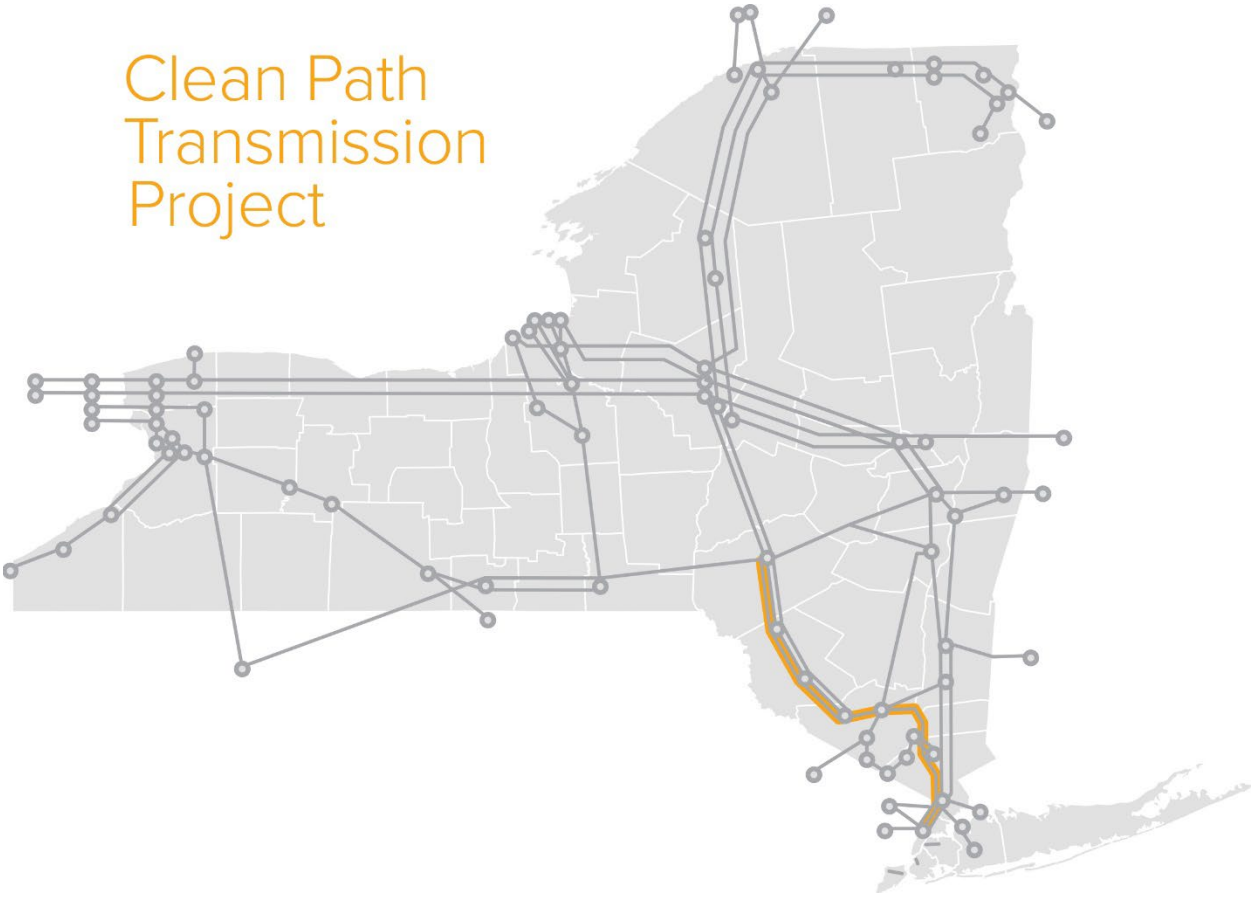
- Fraser substation to Northern Converter Station: ~1 mile of HVAC underground transmission line;
- Northern Converter Station to I-84: ~94 miles of HVDC underground transmission line in NYPA ROW;
- NYSDOT I-84 corridor: ~21 miles of HVDC underground transmission line to Hudson River;
- Newburgh to Peekskill: ~20 miles of HVDC submarine transmission line;
- Peekskill to Croton Point: ~10 miles of underground HVDC transmission line;
- Croton Point to Randall's Island: ~27 miles of HVDC submarine transmission line;
- Randall's Island to Southern Converter Station: ~2 miles of HVDC underground transmission line; and
- Southern Converter Station to Rainey substation: ~3 miles of HVAC underground transmission line.

2. Rights-of-Way

The Project will largely use existing ROWs for electric transmission and distribution lines and/or railroads, reducing the need for substantial additional land acquisitions. The terrestrial transmission line corridor is approximately 131 miles long and is primarily located within existing ROWs owned or controlled by NYPA, NYSEG, MTA Metro-North Railroad, NYSDOT, and NYCDOT. The terrestrial transmission line corridor begins at NYSEG's existing Fraser Substation in the Town of Delhi, Delaware County, and follows the NYPA Marcy South transmission line ROW (NYPA ROW) and adjacent NYSEG transmission line ROW, proceeding eastward for approximately 0.8 miles to the site of the proposed Northern Converter Station. From the proposed Northern Converter Station, the corridor mostly falls within the ROW owned or controlled by NYPA, NYSEG, MTA Metro-North Railroad, NYSDOT, and NYCDOT for 131

miles, terminating at the Southern Converter Station at the Astoria energy complex in Queens. From the Southern Converter Station, the terrestrial transmission line corridor proceeds to its termination POI at the Rainey Substation in Queens. The submarine portion of the transmission line will be located in a 47-mile deviation zone within the Hudson, Harlem, and East Rivers.[37]

The figure below shows the location of the Clean Path Transmission Project within the New York Control Area:



[37] A deviation zone is defined as any area outside of an existing ROW.

B. Preliminary Clean Path Transmission Project Cost Estimate

Table 1 below contains a cost estimate for the Project, which shows a project cost estimate of $5.221 billion. The cost categories listed in Table 1 include the following:

- Right of Way Acquisition – The vast majority of the Project will be built on existing rights-of-way. The estimated cost of additional land acquisition is included here.

- Surveys – The cost of all Project-specific aerial and land surveys and environmental and cultural surveys and studies.

- Major Equipment, Materials and Labor – The cost of all above- and below-grade materials and major equipment to be installed during project construction. All labor and equipment costs for all above- and below-grade portions of construction of proposed facilities, and installation of access roads and work areas to construct the Project. This also includes the labor to restore all temporary access roads and work areas, where required by license or permit, and contractor general conditions, and any system upgrade costs.

- Engineering and Inspection – The cost of relevant professional services, including licensing support, geotechnical investigations, engineering, project management, quality assurance inspections, material testing services, safety monitoring, and environmental compliance monitoring.

- Contingency – Allowance for changes in project costs due to unknown or unforeseen conditions, unforeseen costs, errors and omissions in the construction documents, inflation risk, and changes associated with the labor pool.

- Administrative Overhead – All direct and indirect costs of NYPA resources to be allocated to the project.

Table 1 – Project Cost Estimate for Clean Path Transmission Project

Project Component	Cost (2024 $s)
Land and ROW Acquisitions	**$ 107,047,720**
Surveys	**$ 19,447,643**
Major Equipment, Materials and Labor	**$3,818,558,456**
Project and Construction Management	**$ 212,283,975**
Engineering and Inspection	**$ 48,870,036**
Mob/Demob, Permitting, Material Management and Other Indirects	**$ 212,903,001**
Subtotal:	**$4,419,110,831**
Total Escalation	**$ 178,109,000**
Contingency	**$ 436,383,075**
Administrative Overhead	**$ 187,300,000**
Total Estimated Cost	**$5,220,902,907**

The capital cost estimate for the Project is provided in year 2024 U.S. dollars. Interest during construction, and sales and use taxes are not included.[38]

C. Project Benefits

NYPA is proposing the Clean Path Transmission Project for designation as a PTP because it is necessary to timely facilitate State compliance with the CLCPA Targets. NYPA's analysis projects that the Clean Path Transmission Project will result in production cost savings, emissions reductions, reduced congestion, REC and ZEC cost savings and reductions in capacity

[38] More detailed cost estimates are provided in Attachment A.

costs to ratepayers. Specifically, NYPA calculates that the Project will result in cost savings with a net present value of approximately $6.2 billion[39] over a 23-year period.

The environmental benefits of the Project are also substantial, even without considering the need for the Project to achieve the CLCPA Targets. The Project will result in over 78 million tons of CO_2 emissions avoided on a statewide basis in 2030, increasing to 4,765 million tons in 2035. In addition, the Project will result in a reduction of approximately 0.1 million tons of NOx emissions in 2030, increasing to .11 million tons in 2035. Collectively, these reductions will provide significant air quality benefits to New York City residents.

III. The Commission Should Designate the Clean Path Transmission Project as a Priority Transmission Project

NYPA is proposing the Clean Path Transmission Project for designation as a PTP because it is a key element in increasing the expeditious penetration of renewable generation in New York City in support of the CLCPA Targets. The recent challenges encountered by the State in meeting the 70x30 Target further underscores the need to move expeditiously to develop the Project.[40] The designation of the Clean Path Transmission Project as a PTP would send a market signal to renewable developers that there will be reliable transmission to deliver renewable energy directly into Zone J. The Project meets the criteria established by the Commission in the PTP Order and, further, will enhance both the reliability and resilience of the electric grid. For these reasons, the Project should be designated as a PTP under Section 7(5) of the Accelerated Renewable Act and referred to NYPA for expeditious development.

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[39] Additional details are provided in the Evaluation of Project Viability contained in Attachment B.

[40] See Case 15-E-0302, supra, Draft Clean Energy Standard Biennial Review (filed July 1, 2024) (Draft CES Biennial Review), pp. 11-15, 42, 56-59.

With respect to the established criteria, the Clean Path Transmission Project was expressly designed to help the State decarbonize its electric system in support of the clean energy goals of the CLCPA. As discussed further below, the creation of a new pathway from upstate renewable energy production centers to the New York City load center will unbottle upstate renewable energy, displace the carbon emissions from in-City fossil fuel-fired generators, support the earlier retirement of NYPA's small natural gas power plants,[41] and substantially advance the State towards its CLCPA target of 100% zero emission electric generation by 2040. This will provide substantial benefits to the disadvantaged communities within New York City, where many of the small natural gas power plants are located, and to overall public health statewide through lower emissions. In addition, the Project will create employment and economic development opportunities through greater access to clean energy.

While the purpose of the Accelerated Renewable Act is to accelerate the development and deployment of renewable resources, the Commission's core responsibility is to ensure safe and adequate service,[42] and a critical part of doing so has been to ensure the reliability and, more recently, resilience of the electric system. Although the CLCPA set ambitious goals and targets with the objective of transitioning New York to an emissions-free grid, the Commission has recognized that these goals must be balanced with the reliability and resiliency of the system and the resulting rate impacts to customers.[43] The Project's unique ability, as an HVDC transmission line, to support both the CLCPA goals and also enhance the reliability of the electric grid by

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41 Public Authorities Law § 1005(27-c)(a) requires NYPA to develop a plan to phase out its small natural gas power plants by December 31, 2030.

42 Public Service Law § 65(1).

43 Case 22-M-0149, In the Matter of Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act, Order on Implementation of the Climate Leadership and Community Protection Act (issued May 12, 2022), p. 11.

delivering needed capacity and energy directly into New York City should be considered by the Commission in evaluating the Project as a PTP.

The PTP designation will allow NYPA, either independently or with a selected co-developer, to complete the Project within the next several years – much sooner than under any other alternative – and at a lower cost to ratepayers.[44] Any other approach to selecting and developing a transmission line from upstate to downstate – whether through one of the NYISO's planning processes or a process conducted by the Commission (or by NYSERDA under the Commission's direction) – would delay development of the transmission project by several years. Moreover, substantial progress has been made to date on the former Clean Path New York Project, which NYPA intends to leverage, as feasible, to accelerate the development of the Clean Path Transmission Project at a lower overall cost than an entirely new project.

A. The Clean Path Transmission Project Will Unbottle Renewable Generation and Reduce Curtailments to Improve Deliverability of Clean Energy into New York City

In approving a comprehensive portfolio of bulk transmission upgrades across the State, the Commission has made great strides in expanding the deliverability of renewable generation from the northern and central regions to higher demand downstate areas. NYPA's Smart Path and Smart Path Connect projects[45] have reduced congestion and curtailments in the northern part

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[44] If NYSERDA were to conduct a new Tier 4 solicitation, not only would this delay the in-service date of an upstate to downstate transmission line, but it would come at a higher cost due to several factors, including: (i) the new contracts for Tier 1 projects contain higher prices than contemplated in the original Tier 4 solicitation; (ii) the introduction by the NYISO of capacity accreditation for valuing capacity; and (iii) higher inflation and interest rates and supply chain constraints.

[45] See Case 18-T-0207, Application of New York Power Authority for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII for Smart Path and Case 21-T-0340, Application of New York Power Authority and Niagara Mohawk Power Corporation d/b/a National Grid for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII for Smart Path Connect.

of the State, and the Central East Energy Connect and New York Energy Solution projects[46] have reduced congestion from the Marcy/Utica area to the Capital Region and through the Hudson Valley.

Notwithstanding this notable progress, limitations remain on the ability to transmit renewable generation from upstate areas to downstate load centers. While the CHPE project will deliver hydropower from Canada to New York City, this project bypasses all upstate renewable generation. The Clean Path Transmission Project, however, would create a new pathway to transmit the renewable energy generated upstate to New York City, bypassing the most constrained interfaces on the bulk transmission system and reducing both congestion and curtailment of upstate renewable resources that are currently proposed to be built to meet the State's CLCPA goals. The Project will provide the necessary transmission capacity to support both NYSERDA's and NYPA's renewable generation development efforts[47] and incentivize other developers to pursue renewable generation projects.

The transmission upgrades undertaken in recent years have focused on unbottling existing renewable generation upstate and accommodating additional renewable generation to achieve the CLCPA Targets. While these upgrades have improved the deliverability of renewable energy, constraints on the system will continue to impede the flow of that energy to Zone J, resulting in a continued reliance on fossil fuel-fired generation in New York City. The need for additional transmission capacity to deliver upstate renewables to Zone J has been

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[46] See Case 19-T-0549, Application of LS Power Grid New York, LLC, LS Power Grid New York Corporation I, and the New York Power Authority for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII for Central East Energy Connect and Case 19-T-0684, Application of New York Transco LLC for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII for New York Energy Solution.

[47] See Public Authorities Law § 1005(27-a)(a)(i).

consistently recognized by the NYISO, NYSERDA and other stakeholders.[48] In the NYISO's 2023-2042 System & Resource Outlook Report, the NYISO explained that "bulk transmission constraints will become the limitation for efficient transmittal of renewable energy beyond 2030."[49] The Project will ease such congestion on the bulk transmission system by providing a new pathway for power to flow from upstate directly to New York City.

In February 2023, the Commission approved more than $4 billion of local transmission upgrades to unbottle renewable generation.[50] Those projects will facilitate the ability of renewable resources to interconnect to the State's transmission system but not necessarily to flow their power across the bulk transmission system to downstate load centers. Those projects are of very limited, if any, utility if the requisite transmission facilities are not in place to move the power generated by those projects. In essence, these projects improve and expand the on-ramps to the bulk transmission system. The Clean Path Transmission Project will complement these projects by transmitting the output from the upstate resources across the bulk power system to New York City, maximizing the value and benefits of the local transmission upgrades.

To fully appreciate the impact of the Clean Path Transmission Project, it is important to recognize the distinction between providing energy and capacity, both of which are needed to ensure that the electric system can reliably serve load. The recent upgrades to the bulk transmission system enhanced the energy deliverability of upstate renewable resources to

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[48] See, e.g., Case 16-E-0558, In the Matter of New York Independent System Operator, Inc.'s Proposed Public Policy Transmission Needs for Consideration for 2016, Comments of the New York Independent System Operator, Inc. (filed December 5, 2016), p. 6. The NYISO has supported the need for additional transmission to deliver renewable energy to downstate load centers since as early as 2016.

[49] NYISO 2023-2042 System & Resource Outlook (issued July 23, 2024), p. 55, https://www.nyiso.com/documents/20142/46037414/2023-2042-System-Resource-Outlook.pdf.

[50] Case 20-E-0197, supra, Order Approving Phase 2 Areas of Concern Transmission Upgrades (issued February 16, 2023).

downstate load centers, but they have not enabled any capacity from upstate renewable resources to be deliverable into downstate load centers, particularly New York City. For the State to meet the CLCPA Targets and retire the in-City fossil fleet, while continuing to meet applicable reliability requirements, including the New York City LCR,[51] New York City will need to replace existing sources with carbon-free capacity. As an HVDC line, the Clean Path Transmission Project can deliver capacity and energy directly into Zone J, providing both energy and capacity benefits.[52] Since the HVDC line would provide a 1,300 MW connection between upstate and Zone J load, those additional flows should reduce the LCR in Zone J in both summer and winter. Lowering the LCR would, in turn, reduce the burden of New York City ratepayers to purchase more expensive in-Zone capacity, which translates to a reduction in the price for Zone J capacity.

The Project should serve to lower the winter LCR in New York City. Notably, the CHPE Project has not committed to provide capacity during the Winter Capability Period, which may create a significant challenge in meeting the New York City LCR in the winter months without relying on in-City fossil fuel generation. This will likely become increasingly challenging in the 2030s when New York is projected to transition to a winter-peaking system.[53]

Offshore wind will provide another source of capacity within New York City; however, the NYISO's capacity accreditation rules will impact the amount of capacity those resources can

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[51] The NYISO established LCRs to address transmission constraints between regions and the resulting need for local generation resources. The LCR represents a percentage of the capacity requirement that must be procured from generators located within the zone to meet reliability requirements. This requirement causes price separation between the different capacity zones and results in a higher cost of capacity for those customers located within constrained zones.

[52] To the extent that the Project enables the transmission of capacity from new renewable energy generation resources over the line into Zone J, such resources would be eligible to apply for an exemption from imposition of an offer floor on their capacity prices. See New York Independent System Operator, Inc., 179 FERC ¶ 61,102 (2022) and NYISO OATT, Att. H § 23.4.5.7.5.1.

[53] NYISO 2024 Power Trends Report, p. 9, https://www.nyiso.com/documents/20142/2223020/2024-Power-Trends.pdf/31ec9a11-21f2-0b47-677d-f4a498a32978?t=1717677687961.

provide. Presently, with a deployment of 132 MW, offshore wind has been assigned a capacity accreditation factor of 31.56%.[54] Over time, as more offshore wind resources are constructed to meet the 9 GW CLCPA Target, the NYISO projects that its capacity accreditation factor may decline to less than 5% due to a decline in offshore wind's contribution to system reliability,[55] further validating the Commission's prior determination for the need for new transmission to New York City. At that level of offshore wind capacity accreditation, the 1,300 MW Clean Path Transmission Project would be able to provide more than twice the equivalent LCR benefit to New York City than 9 GW of offshore wind.

Because the Clean Path Transmission Project is a controllable HVDC transmission line capable of transmitting energy from a wide array of upstate resources, it does not present the same type-specific risks as offshore wind resources or the seasonal limitations of the CHPE Project. Rather, it will be capable of delivering upstate renewable and carbon-free power to New York City on a year-round basis. The Project is being designed and engineered to enable bi-directional flows, allowing for the reversal of power flows to transmit excess electricity from downstate offshore wind resources to serve upstate demand when needed.

It is well recognized that an unprecedented scale of new renewable energy resource development will be required to achieve the CLCPA Targets. Indeed, the NYISO estimates a range between 111 GW and 124 GW of total installed generation capacity will be needed by

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[54] NYISO Updated Final Capacity Accreditation Factors for the 2024-2025 Capability Year, p. 2, https://www.nyiso.com/documents/20142/41593818/Final-CAFs-for-the-2024-2025-capability-year.pdf/3efc1e06-c1b0-72d6-f736-22721709c157?t=1708951801025, p. 2.

[55] See NYISO 2023-2042 System & Resource Outlook, p. 47, Figure 23, https://www.nyiso.com/documents/20142/46037414/2023-2042-System-Resource-Outlook.pdf. Because most of the offshore wind projects are being installed in the New York Bight, they will be similarly impacted by wind lulls and other changes in wind intensity. For this reason, the addition of more MW of wind creates higher risk of large-scale unavailability of that supply resource and has a decremental effect on system reliability.

2040 to meet the CLCPA policy objectives, 95 GW of which will consist of new generation projects and/or modifications to existing facilities.[56] Without the Clean Path Transmission Project, it will be extremely difficult to move the generation of these new resources to load centers throughout the State, particularly New York City, and is certain to result in curtailment of upstate renewable resources.

The Project will also serve to address new transmission constraints expected to arise across the system as the State approaches achievement of its 2040 target of an emissions-free electric system. Specifically, the NYISO identified three pockets that would benefit from transmission expansion to avoid significant bulk transmission limitations on the deliverability of renewable power: Finger Lakes, Southern Tier and Watertown.[57] Without the Project, and no alternate path to deliver energy across the Central East Interface, these areas will continue to experience limitations.

B. Designating the Clean Path Transmission Project as a Priority Transmission Project, and Expediting Development and Operation of the Line, Will Increase the Likelihood of Meeting the CLCPA Targets

At the time the Commission established the criteria for identifying a PTP, the State was conceivably positioned to meet the 70x30 Target. In the subsequent four years, the State has grappled with significant factors beyond its control that have impacted the development and deployment of renewable energy resources. The COVID-19 pandemic and the Russian invasion of Ukraine have resulted in high interest and inflation rates, supply chain pressures, and specifically within the energy sector, which is at present largely dependent on foreign supply chains, difficulty in obtaining major equipment and other critical components from overseas

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[56] NYISO 2021-2040 System & Resource Outlook (issued September 22, 2022) (NYISO 2021-2040 Outlook), p. 12, https://www.nyiso.com/documents/20142/33384099/2021-2040-Outlook-Report.pdf/a6ed272a-bc16-110b-c3f8-0e0910129ade.

[57] Id. at 13-14.

manufacturers. In addition, recent analyses show an increase in forecasted demand on the electric system due to increased electrification, industrial growth and new large, energy-intensive economic development projects.[58] The combination of these events makes it unlikely that the State will achieve the 70x30 Target; rather, recent analyses suggest that the 70% renewable electricity goal will be achievable in 2033.[59]

In recognition of these challenges and the need to further accelerate progress towards the aggressive CLCPA Targets, the Legislature, as part of the 2023-2024 budget, authorized and directed NYPA to build, own and operate renewable generation projects to help reach the State's climate goals.[60] With the objective of maximizing the amount of renewable energy deployed across the State, NYPA has analyzed the challenges that exist both within the State and beyond in renewable energy development to establish a proactive approach to successfully develop these critical projects across the State. On October 8, 2024, NYPA issued its inaugural Draft Strategic Plan for developing new renewable energy generation projects for public comment.[61] The Draft Strategic Plan identifies an initial portfolio of 40 projects in every region of the State, totaling more than 3.5 GW of capacity.[62]

Decarbonization of New York City is a crucial element in the State's ability to achieve the CLCPA goals. In approving the two Tier 4 contracts, the Commission noted that "the impending

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58 See Draft CES Biennial Review, p. 42.

59 Id. at 58-59.

60 L. 2023, Ch. 56, Part QQ codified in Public Authorities Law § 1005(27-a)(a).

61 NYPA Renewables Strategic Plan Public Comment Draft (issued October 8, 2024), https://www.nypa.gov/-/media/nypa/documents/document-library/renewables/NYPA-Renewables-Draft-Strategic-Plan. The Draft Strategic Plan was developed pursuant to Public Authorities Law § 1005(27-a)(e)(i)-(x).

62 Draft Strategic Plan, pp. 37-48.

need to reduce emissions from power plants in New York City necessitates immediate action."[63] The need for immediate action has not diminished; rather, the recent obstacles facing the renewable energy market have only amplified the need to move swiftly to facilitate the delivery of clean energy into Zone J. The designation of the Clean Path Transmission Project as a PTP will ensure that the transmission line is in service and ready to deliver the energy from the portfolio of projects developed pursuant to NYPA's expanded authority into New York City, increasing the likelihood that the State meets the CLCPA Targets.

In addition, statewide load growth is forecasted to increase significantly over the next several years due to economic development and industrial growth, as well as beneficial electrification of the transportation and building sectors.[64] This anticipated load growth further underscores the urgency in investing in the necessary infrastructure to expand the grid to increase power transfer capacity and enable the flow of renewable energy, as well as enhance grid reliability and resiliency. Indeed, the NYISO recently observed that "[t]he successful integration and deployment of clean energy will depend heavily on the availability of traditional, large-scale grid infrastructure."[65]

1. The Project Will Support Planned and Future Renewable Generation and Statewide Efforts Encouraging Beneficial Electrification Adoption

Given the recent challenges facing the State as supply chain disruptions and rising inflation and interest rates have increased the cost of building new renewable energy

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63 Case 15-E-0302, supra, Order Approving Contracts for the Purchase of Tier 4 Renewable Energy Certificates (issued April 14, 2022), p. 141.

64 Draft CES Biennial Review, p. 57. In 2019, the New York City Council passed the Climate Mobilization Act, a series of laws intended to dramatically reduce carbon emissions from buildings in the City. The core of that Act is Local Law 97, which requires buildings larger than 25,000 square feet to meet strict greenhouse gas emissions limits beginning in 2024.

65 NYISO 2024 Power Trends Report, p. 14.

generation,[66] it is imperative that the State facilitate the construction of all upstate renewable generating projects currently proposed in the NYISO interconnection queue and encourage the addition of new projects to the queue. As noted in the Draft CES Biennial Review, three Tier 1 annual solicitations are scheduled for 2024, 2025 and 2026, specifically seeking projects capable of deploying by 2030 to fill the gap resulting from recent higher project attrition rates for both Tier 1 and offshore wind projects.[67] These solicitations, in conjunction with NYPA's directive to develop renewable generation projects, will only be effective if there is sufficient transmission available to ensure reliable delivery of that generation to loads throughout the State, particularly Zone J. The Clean Path Transmission Project will enable the State to fully employ the proposed renewable generation in the NYISO queue and send a market signal to developers for future projects resulting from the upcoming solicitations, as well as support NYPA's efforts to develop renewable generation pursuant to its expanded authority.

The Project will also complement statewide efforts to encourage adoption of beneficial electrification in the transportation and building sectors. By way of example, in 2019, the New York City Council passed the Climate Mobilization Act, a series of laws intended to dramatically reduce carbon emissions from buildings in the city. The cornerstone of that Act is Local Law 97, which, among other things, requires buildings larger than 25,000 square feet to meet strict greenhouse gas emissions limits beginning in 2024.[68] These buildings account for approximately two-thirds of all greenhouse gas emissions in New York City and, therefore, are a critical part of meeting the CLCPA Targets. The Project will enable the delivery of fossil-free generation into Zone J to support this and other beneficial electrification efforts downstate.

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66 Draft CES Biennial Review, pp. 11-13, 57.

67 Id. at 56.

68 Local Laws of the City of New York for the Year 2019, Local Law No. 97.

2. The Project Can Be In Service Before 2030 to Advance the CLCPA Targets

The Clean Path Transmission Project could be operational more expeditiously than any other transmission project because its development is already well underway and NYPA could build on the work already performed. The majority of the Clean Path Transmission Project will be located within NYPA's ROW and both converter stations will be constructed on NYPA property. For the remaining portions of the Project not within its ROW, NYPA has secured a significant number of options from landowners along the route and efforts are well underway to obtain the remaining necessary land rights to construct the Clean Path Transmission Project.

The Clean Path Transmission Project is under evaluation for interconnection as part of the NYISO's Class Year 2023 interconnection process, which was completed in September 2024. In addition, the Project has a pending application under Article VII of the Public Service Law[69] and efforts to secure federal permits are well underway. Given the numerous interconnection, procurement and permitting processes necessary for such a project, it would take years for any other transmission project to reach the same point in the development process.[70]

In addition, Clean Path New York LLC has contracted to secure valuable fabrication slots for the cable needed to construct the Project and engaged with manufactures to procure the

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[69] The Article VII application was deemed in compliance with Section 122 of the PSL as of May 31, 2023, and the parties had been engaged in settlement negotiations up until a recent temporary pause following the termination of the Tier 4 contract. Case 22-T-0558, Application of New York Power Authority and Clean Path New York LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of Approximately 178 Miles of Transmission Lines and Associated Facilities from Delhi, New York, to Queens, New York, Letter Regarding Application Compliance (issued June 6, 2023).

[70] See Case 22-E-0633, In the Matter of New York Independent System Operator, Inc. Proposed Public Policy Transmission Needs for Consideration for 2022, Potentially Applicable Permits, Approvals and Consultations for Projects Responding to the New York City Public Policy Transmission Need (filed July 3, 2024). The likely timeframe for obtaining the applicable permits, approvals and consultations for a project through the NYISO's Public Policy Transmission Planning Process is approximately 5.5 years.

HVDC equipment. NYPA will endeavor to negotiate with Clean Path New York LLC to obtain the necessary assignments of the rights and obligations of existing equipment contracts to NYPA. Due to the number and magnitude of electric infrastructure projects being developed in New York, nationally and around the world, there is a massive demand for these components. At the same time, there is a limited number of manufacturers of transmission cable, converter station equipment and other necessary transmission components; therefore, there could be four to five years or longer between the time an order is placed and when it is received. Similarly, the massive demand and limited supply of this key equipment has also resulted in substantial cost increases. If a developer were to execute a new contract for the converter stations for the Project, within the NYISO's Public Policy Transmission Planning Process, the cost of that equipment could be up to $280 million more based on projected cost escalations by the manufacturers. NYPA can leverage the work that has already been completed and Clean Path New York LLC's position in the production queues to expedite completion of the Project as a PTP.[71]

3. The NYISO Planning Process Would Substantially Delay the Project, Jeopardizing the State's Achievement of the CLCPA Targets

With development of the Clean Path Transmission Project already underway, it is well positioned to be in service in advance of 2030 if designated as a PTP. However, should the Commission decline to issue such a designation, the potential consideration of the Project in the NYISO's Public Policy Transmission Planning Process would substantially delay its in-service date. Although effective in identifying bulk transmission needs to meet public policy requirements, the NYISO's Public Policy Transmission Planning Process is an extensive process

[71] Attachment C contains a detailed schedule for the Project.

that includes with the Commission's review. This biennial process begins with a NYISO solicitation for interested entities to identify Public Policy Requirements that may drive the need for transmission development in the State.[72] The NYISO files the responses received to the solicitation with the Commission which then initiates the 60-day State Administrative Procedure Act public notice and review process. The Commission subsequently makes a determination on whether the identified potential transmission needs constitute a Public Policy Requirement driving the need for additional transmission facilities.[73]

If the Commission identifies any Public Policy Requirements, referred to as Public Policy Transmission Needs (PPTNs), the NYISO holds a technical conference and issues a second 60-day solicitation for proposed solutions to the identified PPTNs. The NYISO conducts a Viability and Sufficiency Assessment for each proposed solution and presents the results of this assessment to stakeholders, DPS Staff, and other interested parties for review and comment. After the NYISO files the final Viability and Sufficiency Assessment with the Commission, the NYISO proceeds to the evaluation phase wherein it conducts an analysis of the competing solutions, which culminates in a Public Policy Transmission Planning Report. The NYISO Board reviews the report and may select the more efficient or cost-effective solution to the identified PPTNs. Following selection, additional time is required for the developer of the Designated Public Policy Project selected by the NYISO to negotiate and execute a Development Agreement, which outlines the terms and conditions of the development and construction of the project.

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[72] NYISO OATT, Attachment Y, § 31.4. Unless otherwise defined, capitalized terms used in this section have the same meanings given to them under the NYISO's OATT.

[73] This determination is subject to judicial review pursuant to Article 78 of the New York Civil Practice Laws and Rules. NYISO OATT, Attachment Y, § 31.4.2.2.

The NYISO has recently commenced the next Public Policy Transmission Planning Process and based on previous cycles, the results of that process will not reach the Commission until at least mid-2025. If the Commission was to identify a PPTN in that process, the NYISO likely would not select a project until at least mid-2027. This virtually guarantees that any project selected through the next NYISO Public Policy Transmission Planning Process will not be placed in service until long after 2030. This would negate any opportunity the Project will have to capitalize on significantly advanced interconnection status, permitting status and procurement of key equipment like converter stations, which could potentially cost up to $280 million more if the schedule was to shift into the early to mid-2030s. Designating the Clean Path Transmission Project as a PTP will avoid this delay that would otherwise impede meeting the impending need to reduce New York City's reliance on fossil fuel-fired generation in support of the transition to a zero-emissions electric grid. These statements are not meant to be a criticism of the NYISO's Public Policy Transmission Planning Process, but rather to underscore the need for the Clean Path Transmission Project to proceed through the expedited PTP process to be in service in time to help the State achieve its CLCPA Targets.

C. The Project Provides Reliability, Resiliency, Environmental Justice and Public Health Benefits That Advance the Public Interest

Beyond the benefits in helping the State to meet its CLCPA Targets, the Clean Path Transmission Project also provides reliability and resiliency benefits and environmental and public health benefits. The reliability of the State's power grid is of paramount importance. The need for a reliable electric system in New York is so widely recognized that in enacting the Energy Policy Act of 2005, Congress carved out an exception exclusively for New York, allowing it to "establish rules that result in greater reliability within th[e] State, as long as such

action does not result in lesser reliability outside the State than that provided by the reliability standards."[74]

The Project will serve to both improve the reliability of the State's electric system and address identified reliability needs in New York City. The NYISO's Comprehensive Reliability Plan for 2023-2032 stressed that "electric grid reliability margins are narrowing and could be eliminated over the next ten years based upon potential changes in forecasted system conditions and the pace of change in electric grid resources."[75] The NYISO identified risk factors to the long-term plan, including "delayed implementation of projects in th[e] plan, greater demand on the electric grid, additional generator deactivations, unplanned outages, and extreme weather, that could potentially lead to the identification of new reliability needs" and a near-term reliability need beginning in summer 2025 within New York City based upon "expected generator availability, transmission limitations, and updated demand forecasts."[76] The solution to this near-term reliability need was to keep operational a fleet of aging, polluting peaking generating units (often referred to as "peakers").[77] However, the NYISO's analyses indicate a potential for New York City to experience another near-term reliability need beginning in the early 2030s.[78] If designated as a PTP, the Clean Path Transmission Project will be in service and ready to address this anticipated reliability need which could diminish the potential need to rely on heavily polluting peaking generating units in the future.

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74 16 U.S.C. § 824o(i)(3).

75 NYISO 2023-2032 Comprehensive Reliability Plan (issued November 28, 2023), p. 5, https://www.nyiso.com/documents/20142/2248481/2023-2032-Comprehensive-Reliability-Plan.pdf/c62634b6-cdad-31dc-5238-ee7d5eaece04.

76 Id. at 5, 31; NYISO STAR 2023 Q2 Report, p. 4.

77 NYISO 2024 Power Trends Report, p. 21. The DEC's Peaker Rule allows peakers to temporarily remain on the system as a last resort if no other viable solutions are identified by the time the reliability need is expected.

78 NYISO 2023 STAR Q2 Report, pp. 4, 131-132.

Members of disadvantaged communities,[79] many of whom live in New York City, are considered to be among the State's most vulnerable populations, and the CLCPA was enacted, in part, to focus efforts on serving the needs of such communities. The Project will bring renewable energy from upstate to Zone J and the disadvantaged communities therein that have disproportionately borne the burdens of environmental pollution and negative public health effects due to their proximity to fossil-fuel fired generators. Replacing these generators with electricity from upstate renewable resources will serve to greatly reduce the emission of greenhouse gases, such as carbon dioxide, and particulate matter, significantly improving air quality for these communities and all New York City residents.

D. Additional Information Required by the Commission

In the PTP Order, the Commission identified certain information and analyses that NYPA should provide in support of future PTP applications. Specifically, the Commission encouraged NYPA to submit: 1) engineering and economic analyses similar to those required in the NYISO's Public Policy Transmission Planning Process; 2) detailed cost allocation and recovery analyses; 3) a cost containment/risk-sharing mechanism; and 4) the scope of, and cost estimates for, necessary local system upgrades.

1. Cost Allocation and Recovery Proposals

NYPA proposes to use a regional cost allocation method for the Clean Path Transmission Project which would allocate costs based on the extent to which benefits will accrue to ratepayers. The primary benefit of the Project is congestion relief for Zone J, but other benefits,

[79] The CLCPA defines "disadvantaged communities" as "communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high-concentrations of low- and moderate- income households." Pursuant to the CLCPA, the Climate Justice Working Group was formed to establish criteria for identifying disadvantaged communities and ensuring these communities directly benefit from the State's transition to renewable energy.

such as improved system reliability and air quality, will accrue to ratepayers statewide. Accordingly, NYPA proposes to allocate 60% of the costs of the Clean Path Transmission Project to Zone J, as the benefits of the Project are primarily focused and realized in Zone J. The remaining 40% of costs should be allocated to the rest of State on a load ratio share basis (60/40 Cost Allocation Method). NYPA intends to seek cost recovery through a Federal Power Act Section 205 filing with the Federal Energy Regulatory Commission.

2. Cost Containment/Risk-Sharing Mechanism

Section 31.4.5.1.8 of Attachment Y to the NYISO OATT permits developers to submit a voluntary hard or soft Cost Cap proposal with its project submission that covers its Included Capital Costs,[80] but not its Excluded Capital Costs.[81] NYPA commits to a cost containment mechanism in accordance with the NYISO OATT such that NYPA will forego recovery of potential cost overruns for Included Capital Costs[82] consistent with a 80/20 soft cost cap split,

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[80] Included Capital Costs is defined in Section 31.4.5.1.8.1 as "all capital costs incurred by a Developer to plan for and construct a Public Policy Transmission Project, and to make it ready for its intended use. . . . Capital costs include the cost of contract work, labor, materials and supplies, transportation, special machine services, shop services, protection, injuries and damages, privileges and permits, engineering services, reasonably expected environmental site remediation and environmental mitigation costs as described in Section 31.4.5.1.8.1.1, general administration services, legal services, real estate and land rights, rents, studies, training, asset retirement, and taxes. At its option, a Developer may choose to include as Included Capital Costs real estate costs for existing rights-of-way that are part of the proposed Public Policy Transmission Project, but are not owned by the Developer (*e.g.*, existing utility rights-of-way)."

[81] Excluded Capital Costs is defined in Section 31.4.5.1.8.2 as the following categories of costs: (i) the cost of Public Policy Transmission Upgrade(s); (ii) the cost of upgrade facilities determined by the ISO that are necessary for the reliable interconnection of the proposed Public Policy Transmission Project in one of its transmission expansion or interconnection processes; (iii) debt costs, allowance for funds used during construction, and other representations of the cost of financing the transmission project during the construction timeframe that may be included as part of the capital cost of the project when it enters into service or as otherwise determined by the Commission; (iv) unforeseeable environmental remediation and environmental mitigation costs as described in Section 31.4.5.1.8.2.1; and (v) real estate costs for existing rights-of-way that are part of the proposed Public Policy Transmission Project, but are not owned by the Developer, that Developer chooses not to include as Included Capital Costs pursuant to Section 31.4.5.1.8.1.

[82] Unless otherwise specified, capitalized terms have the meaning attributed to them as in the NYISO OATT.

whereby NYPA and ratepayers would share in the risk that actual Project costs exceed the estimated costs.[83] Under the 80/20 soft cost cap, NYPA would be responsible for 20% of the amount that the actual costs exceed the estimated costs. In other words, ratepayers will not contribute toward 20% of the cost overruns above the estimated costs included in the Project submission, after accounting for inflation, from this submission to the commencement of construction.

3. Local System Upgrades

NYPA has been actively engaged in the NYISO's interconnection process for Class Year 2023 and is aware of the necessary local system upgrades for the Project. These include substation upgrades at Consolidated Edison Company of New York, Inc.'s Rainey substation and NYSEG's Fraser substation. The anticipated cost of these upgrades is approximately $55 million based on the most recent NYISO Class Year 2023 interconnection study.

Conclusion

For the reasons set forth above, NYPA respectfully requests that the Commission designate the Clean Path Transmission Project a Priority Transmission Project under Section 7(5) of the Accelerated Renewable Act and refer the Project to NYPA for expedited development.

[83] NYPA also includes a 2% escalation factor on its initial estimated costs.

Respectfully submitted,

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Attachment A – Project Cost Estimate
Attachment B – Project Benefit Analysis Report
Attachment C – Project Schedule Milestones

ATTACHMENT A

This Attachment has been intentionally omitted as it contains confidential information.

ATTACHMENT B

Clean Path New York Transmission Project
Evaluation of Project Viability

Resource Planning Group

System Planning & Analysis

New York Power Authority

December 2024

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EXECUTIVE SUMMARY

The Resource Planning Group of the System Planning & Analysis (SPA) Division at the New York Power Authority (NYPA), with the assistance of General Electric Energy Consulting (GEEC), modeled the impacts of the Clean Path New York Transmission Project (referred to as the CPNY Transmission Project or the Project) on the New York State electric power system.

The CPNY Transmission Project consists of an underground high voltage direct current (HVDC) transmission line that will run from Delaware County to New York City (NYC), covering 174 miles in length and capable of delivering 1,300 megawatts (MW) from the upstate region. The 400 kilovolt (kV) HVDC cable will have a cross-linked polyethylene insulated single-core cable. The Project is expected to be in service in 2029.

NYPA's Resource Planning Group calculated the Project's production cost savings using the GE-MAPS software with assumptions from the internal evaluation of the Contract case between 2030 and 2032 and the NYISO's 2021 System & Resource Outlook Scenario S2[1] for post-2033 (the year it is assumed that the State will meet the Climate Leadership and Community Protection Act (CLCPA) target that 70 percent of electricity be generated from renewable resources), including where the State achieves the CLCPA target of 100% zero emission electric generation by 2040. Similarly, NYPA evaluated the Project's impact on the Transmission Security Limit (TSL) and appropriate Locational Minimum Installed Capacity Requirement (LCR) impact in Zone J in the pre- and post-cases to arrive at the potential capacity market savings. These savings are calculated using NYPA's proprietary capacity price forecast model, employing supply and demand inputs consistent with NYPA's most recent Long-Term Outlook, and incorporating the New York State Independent Operator, Inc.'s (NYISO) recent capacity market reforms and the latest results from the Demand Curve Reset process.

The savings are calculated as the difference between the pre-Project (without the Project) and post-Project (with the Project) results over the duration of the Project's study period, which is 23 years. NYPA' s estimated Benefit to Cost ratio (B/C Ratio) range is 1.0 (lower bound) to 3.6 (upper bound) (for more details on the B/C Ratio, see the Conclusion section). The lower bound assumes the State will not achieve an 100% emissions-free electric system within the modeling horizon up to 2052, and the upper bound assumes the State will achieve 100% zero emission electric generation in 2040.

NYPA conducted discrete year simulation studies for years 2030, 2033, 2035, and 2040. The high-level assumptions of the study are defined in the modeling assumptions on page 6 of this report, which consist of: the system with existing renewables, achievement of the CLCPA 70% renewable penetration target in 2033, achievement of the CLCPA 9 gigawatts (GW) of offshore wind target in 2035, and achievement of 100% zero emission electric generation in 2040.

The CPNY Transmission Project offers many benefits in terms of production cost savings, load payment savings, LCR savings, Renewable Energy Credits (RECs) and Zero-Emission Credits (ZECs) savings, emission reductions and decreased congestion in the New York Control Area (NYCA) system, particularly on the Central East and Total East Interfaces. NYPA's analysis yields 23-year present value[2] savings as follows:

[1] NYISO 2021-2040 System & Resource Outlook (issued September 22, 2022) (NYISO 2021-2040 Outlook), https://www.nyiso.com/documents/20142/33384099/2021-2040-Outlook-Report.pdf/a6ed272a-bc16-110b-c3f8-0e0910129ade.

[2] NYPA used a discount rate of 7.05% for the present value calculation.

Lower Bound Benefits

Metric	3-yr PV (2030-2032)	20-yr PV (2033-2052)	Cumulative PV (2030-2052)
Production Cost Savings (million $)	$0	$251	$251
Load Payment Savings (million $)	$10	$344	$354
RECs/ZECs Savings (million $)	$1	$427	$428
Congestion Reduction on Central East and Total East (million $)	$7	$1,160	$1,167
Impact on LCR Savings (million $)[3]	$1,400	$2,600	$4,000
Total Benefits			$6,200
Benefit-Cost Ratio			1.0
CPNY Transmission Project Utilization[4]	12% to 14%	30% +	

In the lower bound scenario, the State does not achieve a 100% zero emission electric grid within the modelled timeframe. The study assumes achievement of the CLCPA goals of 70% renewable energy generation in 2033 and 9 GW of offshore wind in 2035. Values post-2035 were escalated to 2052 for the purpose of calculating the 20-year present value.[5]

[3] In both the lower bound and upper bound scenarios, secondary market effects were not considered and can reduce overall capacity savings. Secondary market effects modeling typically assumes that market participants and/or the NYISO will respond to either higher pricing or reliability shortfalls (in the event the CPNY Transmission Project is not available) with supply adjustments that may reduce the impacts of the Project.

[4] The NYISO estimated the utilization of the Project in its modeling to be 14% in 2030, 39% in 2035, and 83% in 2040, assuming a zero emissions electric system and significant transmission expansion by 2040 to relieve renewable generation pocket constraints. NYISO 2021-2040 Outlook, p. 58.

Upper Bound Benefits

Metric	3-yr PV (2030-2032)	7-yr PV (2033-2039)	13-yr PV (2040-2052) (NYS Zero Emissions)[6]	Cumulative PV (2030-2052)
Production Cost Savings (million $)	$0	$111	$2,308	$2,418
Load Payment Savings (million $)	$10	$153	$11,339	$11,501
RECs/ZECs Savings (million $)	$1	$190	$0	$191
Congestion Reduction on Central East and Total East (million $)	$7	$569	$2,860	$3,437
Impact on LCR Savings (million $)	$1,400	$2,600	0	$4,000
Total Benefits				$21,547
Benefit-Cost Ratio				3.6
CPNY Transmission Project Utilization	12% to 14%	30% +	75% +	

In the upper bound scenario, the study assumes that the State achieves the CLCPA goals of 70% renewable energy generation in 2033, 9 GW of offshore wind in 2035, and a 100% zero emission electric grid in 2040. Values post-2040 were escalated to 2052 for the purpose of calculating the present value.

The CPNY Transmission Project utilization ranges from 12–14% in the Contract case to 30–40% in the Policy case by 2035 to over 75% post-2040 in the 100% emissions-free electric system in the NYPA/GEEC study. Utilization increases as the load and renewable penetration upstate increases. In the NYISO study, utilization is 80+% post-2040 in the 100% fossil free energy scenario.[7]

In addition, NYPA's analysis shows that there is a carbon dioxide (CO_2) reduction of 75–100 million tons statewide in the Contract case between 2030 to 2032 and a reduction of 1,200–5,000 million tons in the Policy case between 2033 and beyond until the State achieves the CLCPA's zero emissions electric grid target. NYPA's analysis also shows that there is a small nitrogen oxide (NOx) reduction statewide. NOx has long been recognized as playing a key role in chronic lung disorders, including asthma.

6 NYPA/GEEC made some very high-level assumption on fossil generation that would operate on hydrogen/renewable gas fuel (which is 5x multiples in fuel costs and 3x multiples in variable O&M costs). In reality, no technology has been studied that could be equivalent to a dispatchable emissions free type of resource. It is possible to have a unit that provides zero emission with a much lower dispatch cost. This could change the economics of the 2040 system and the overall benefits.

7 NYISO 2021-2040 Outlook, p. 58.

STUDY APPROACH

NYPA retained GEEC to perform the production cost analysis. GEEC utilized production cost models developed in Multi-Area Production Simulation (MAPS) to analyze system congestion under various future scenarios and system conditions. The software performs a security-constrained economic commitment and dispatch and optimizes for the minimum hourly production cost of supply resources to meet the load plus losses.
The NYPA/GEEC production cost model optimizes 4-pool (NYISO, PJM, ISO New England (ISO-NE) and Independent Electricity System Operator (IESO)) generation to match the load in each hour with the aim of minimizing the overall system production cost. The Hydro Quebec system is modelled as historical fixed transactions into NYS. NYPA/GEEC are using the MAPS database that has been benchmarked to historical year 2022.

Production cost models require input data to develop cost curves for the resources that the model will commit and dispatch to serve the load, subject to the constraints included in the model. Generator inputs to the model include generator heat rates, fuel price forecasts, emission price forecasts, and hourly generation profiles for renewable resources. Transmission inputs include an explicit nodal model and individual constraints, contingencies, and interface limitations. Peak and annual demand forecasts for each area/zone in each pool, as well as hourly load patterns, are the key inputs to formulate the load representation in the production cost model.

The NYPA/GEEC production cost simulations provide estimates of future system operations based on the detailed inputs to the model. Results are available up to an hourly resolution and include metrics such as generation, load, locational based marginal pricing (LBMP), generator production cost, imports/exports, and renewable generation curtailment. System production cost is an industry recognized metric that can be used to measure the economic cost of meeting electricity demand with generation.

Project Evaluation Using Production Cost Models
Production cost simulations can gauge the impact of a proposed transmission project on NYCA-wide production costs. A pre-project case (or base case) is first simulated without a project in place to establish a baseline for comparison with all the assumptions included for the model. A post-project (or solution) case with the transmission project added to the underlying transmission model is then simulated and metrics are compared to the pre-project case. Production cost savings for a project are calculated as the difference between the pre-project and post-project results over the duration of the project's study period.

NYCA production cost is the total generation cost of producing power to serve NYCA load. The total cost includes the following components:

1. Fuel cost (fuel consumption mmBtu multiplied by fuel price $/mmBtu);
2. Variable operations and maintenance (O&M) cost (VOM adder $/MWh);
3. Emission cost (emission allowance price multiplied by total emissions);
4. Start-up cost (number of starts multiplied by start-up cost); and
5. NYCA Imports and Exports evaluated at the solution case proxy bus LBMP values.

Generation resources with no variable cost (e.g., solar, wind, and hydro) do not contribute to the production cost given that they produce energy for $0/MWh. Any REC subsidies for each of these resource types are modeled as a negative "bid adder" used only to create a dispatch order (not to contribute to production cost).

NEW YORK STATE ELECTRIC SYSTEM MODELING ASSUMPTIONS

The MAPS database used by NYPA and GEEC is a commercially available database that was provided by GEEC. The modeling assumptions are derived from public sources, including the NYISO 2021-2040 System & Resource Outlook Scenario State Scenario S2, the NYISO Gold Book, and the ABB Velocity Suite. A summary of the key modeling assumptions is provided below.

Peak Load & Energy Forecast

The peak load and energy forecast is based on the NYISO's 2024 Gold Book for the Contract case from 2030 to 2032 and the NYISO's 2021 Outlook Policy Scenario S2 for 2033 to 2040. Neighboring ISO data was derived from respective current ISO reports.

Existing Generation and Future Supply Plans

Generating unit capacities are based on the 2022 NYISO Gold Book with updated winter and summer demand maximum net capability values and ABB Velocity Suite and S&P Global data. Neighboring ISO capacities were gathered from ABB Velocity Suite and S&P Global data.

New/future generation and energy storage resources are based on the following assumptions:

Contract Case (2030 – 2032)

The Contract case employs the following assumptions:

- NYS will be delayed in meeting the CLCPA target of 70% renewable energy generation by 2030.
- Approximately 1,876 MW of offshore wind, 1,752 MW of Utility Scale Photo Voltaic, and 200 MW of Energy Storage will be built by 2030.

NYSERDA Contract Case - 2030 Build Out

Wind	MW	Solar	MW	Energy Storage	MW
Wind-A	-	Solar-A	260	Energy Storage-A	-
Wind-B	-	Solar-B	240	Energy Storage-B	-
Wind-C	-	Solar-C	727	Energy Storage-C	-
Wind-D	-	Solar-D	-	Energy Storage-D	-
Wind-E	-	Solar-E	245	Energy Storage-E	-
Wind-F	-	Solar-F	180	Energy Storage-F	-
Wind-G	-	Solar-G	100	Energy Storage-G	-
Wind-J	816	Solar-J	-	Energy Storage-J	100
Wind-K	1,060	Solar-K	-	Energy Storage-K	-

Transmission	Summer	Winter
CHPE	1,250	-
CPNY	1,300	1,300

Non-NYSERDA Contracted Storage

East River	100

Policy Case (2033 – 2040)

The Policy case uses assumptions from the NYISO's 2021-2040 System and Resource Outlook Policy Scenario S2 as the starting point. Offshore wind buildout is based on the Long Island Offshore Wind Export Public Policy Transmission Need (LI-PPTN). This case assumes the State will meet the CLCPA target of 70% renewable energy generation in 2033 (a delay of three years from the 2030 target), achieve 3 GW of energy storage by 2030, meet the 9 GW of offshore wind target in 2035, and achieve a 100% emissions-free electric system by 2040.

2033 Policy Case Supply Plan

2030 Supply Plan	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G	Zone H	Zone I	Zone J	Zone K	Grand Total
Battery	105	0	379	15	396	105	-	-	349	1,288	375	3,012
Hydro	2,449	29	106	1,133	366	390	87	-	-	1,310	-	5,869
Pumped Storage	240	-	-	-	-	1,166	-	-	-	-	-	1,406
Fossil	576	124	3,055	345	198	3,031	4,269	85	8	9,402	5,229	26,324
Nuclear	-	552	2,750	-	-	-	-	-	-	-	-	3,302
Wind	2,336	511	2,777	1,103	1,754	139	95	-	-	-	-	8,714
Solar	2,236	497	1,523	210	1,707	1,412	261	-	-	-	62	7,908
BTM-Solar	890	645	1,291	36	627	1,767	942	133	169	1,169	1,946	9,615
OSW	-	-	-	-	-	-	-	-	-	816	3,079	3,895
Total	8,831	2,358	11,881	2,843	5,048	8,010	5,654	218	526	13,985	10,691	70,046

2035 Policy Case Supply Plan

2035 Supply Plan	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G	Zone H	Zone I	Zone J	Zone K	Grand Total
Battery	145	4	1,036	20	787	105	-	-	349	1,698	606	4,750
Hydro	2,449	29	106	1,133	366	390	87	-	-	1,310	-	5,869
Pumped Storage	240	-	-	-	-	1,166	-	-	-	-	-	1,406
Fossil	576	124	3,055	345	198	3,031	4,269	85	8	9,402	5,229	26,324
Nuclear	-	552	2,750	-	-	-	-	-	-	-	-	3,302
Wind	3,849	736	5,018	1,599	3,027	643	319	-	-	-	-	15,190
Solar	3,970	497	4,312	396	3,433	3,705	301	-	-	-	62	16,676
BTM-Solar	1,111	859	1,603	50	825	2,127	1,039	180	202	1,433	2,198	11,627
OSW	-	-	-	-	-	-	-	-	-	5,926	3,079	9,005
Total	12,339	2,801	17,880	3,544	8,636	11,167	6,015	265	559	19,769	11,174	94,150

2040 Policy Case and Zero Emission Plan

2040 Supply Plan	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G	Zone H	Zone I	Zone J	Zone K	Grand Total
Battery	424	281	2,167	27	3,578	369			372	2,251	1,943	11,412
Hydro	2,449	29	106	1,133	366	390	87	-	-	1,310	-	5,869
Pumped Storage	240	-	-	-	-	1,166	-	-	-	-	-	1,406
DEFR (Fossil)	576	124	3,055	345	198	3,031	4,269	85	8	9,402	5,229	26,324
Nuclear	-	552	2,750	-	-	-	-	-	-	-	-	3,302
Wind	5,703	1,131	7,217	1,996	4,308	1,047	515	-	-	-	-	21,916
Solar	6,279	965	6,720	1,143	10,327	5,731	421	-	-	-	250	31,836
BTM-Solar	1,377	1,104	1,962	60	1,170	2,847	1,707	213	267	1,964	3,074	15,745
OSW	-	-	-	-	-	-	-	-	-	5,926	3,797	9,723
Total	17,047	4,186	23,977	4,705	19,947	14,581	6,999	298	647	20,853	14,293	127,534

Wind/Solar/OSW Resource hourly dispatch modeling is based on NYISO, GEEC, National Renewable Energy Laboratory, and/or developer data (as available). Other Resources modeling is consistent with the 2022 NYISO Gold Book and the Outlook.

All upstate nuclear units are online for the study period. Indian Point Nuclear Generating Units 2 and 3 have been retired prior to the first study year.

Units affected by the New York State Department of Energy Conservation NOx rule were retired in the downstate region; however, some unit retirement dates were adjusted based on the recent NYISO 2024 Short-Term Assessment of Reliability report findings.

External generation in PJM, ISO-NE and IESO is based upon continued economic generation/transmission modeling work in those regions using public ISO sources and the S&P Market Intelligence platform.

Transmission
Major transmission that is included in the NYPA/GEEC MAPS model in both the Contract case and Policy case is as follows:

- NextEra's Empire State Line in Western New York
- AC Transmission Project Segments A and B
- Northern NY Priority Project (SmartPath Connect) by NYPA
- HQ NY HVDC 1,310 MW Proxy in-service by 2027 in Zone J using historical HQ schedules
- CPNY Transmission Project – 1,310 MW HVDC line from Frasier to Rainey in NYC (for post-Project evaluation case only)
- LI-PPTN (Solution T052) – Propel NY AS 5 in 2030

In addition, the most recent Consolidated Edison Company of New York, Inc. Local Transmission Plan projects, along with upgrades at the Brooklyn Clean Energy Hub are also included in the MAPS model.

Fuel & Emissions
Fuel forecasts are based on GEEC's Gas Pipeline Competition Model (GPCM) model updated for Fall 2023 release. Emissions price forecasts are based on the NYISO's Outlook Policy Scenario S2. GPCM simulates future natural gas industry activity that provides forecasts for North American gas flows, price and basis. It is a complete system of interrelated models for simulating gas production, pipeline and storage capacity utilization, deliveries to local distribution companies, utilities, and industrial consumers, as well as commodity prices at points throughout the North American market.

Fuel assumptions for 2040 presume that the existing fossil fleet is converted to a dispatchable emissions free type resource with variable O&M multiple of 2.5x – 4x depending on technology and fuel costs have a 5x – 6x multiple of delivered hub price.

External Area Market Modeling
The power systems adjacent to the NYISO are represented as operating systems committing and dispatching generation to meet demand. The amount of power imported to and exported from the NYISO, and these adjacent systems, is based on economic dispatch within the control area in the respective years. Other than HQ, which is fixed imports, other neighboring ISO import and export amounts are not a fixed input assumption. NYISO Imports/Exports are based on economic transactions clearing the hurdle rates across the NYISO interfaces.

In 2040, although external regions and states have renewable portfolio standards and zero emission system goals, most states in the external ISO have existing fossil generation in operation. NYPA's modeling have made assumptions on the transactions costs at the border with the following calculation in place: NY clean generation + clean imports add up to 100% zero emission (or 100% emissions-free electric system).

Locational Capacity Requirement Impact Savings Methodology
TSLs are input constraints used in the LCR optimization process to ensure the LCRs are set at or above this "floor." Transmission constraints are studied by the NYISO and then considered as bulk power transmission capabilities in the calculation process. These bulk power transmission capabilities are studied respecting N-1-1 conditions. After the process, each of the downstate zones (including Zone J) has a TSL Floor. The model parameters were adjusted accordingly as deemed appropriate in the pre- and post-Project cases to arrive at the savings. Capacity benefit cases were defined in a similar manner to the pre- and post-Project cases in the production cost analysis.

Capacity price forecasts are outputs from a NYPA proprietary fundamental capacity pricing model.

- The capacity price forecast is produced by a proprietary capacity price forecast model developed by NYPA's Energy Economics group, utilizing supply and demand inputs consistent with our most recent Long-Term Outlook.

- The model also incorporates the impact of the Project on NYC Transmission Security Margins, which will replace the loss of source contingency, as necessary, and includes the updates to the NYISO's capacity market reforms and the latest results from the Demand Curve Reset process.

- Translating the price forecast into a total ratepayer impact includes market knowledge on the extent to which bilateral arrangements, self-supply, and index RECs serve as hedges mitigating the impact of changing spot prices, as well as the differing volumes purchased under different scenarios.

- Secondary market effects modeling assumes that market participants and/or the NYISO will respond to either higher pricing or reliability shortfalls (in the absence of the Project) with supply adjustments that may impact the expected savings of the Project.

Load Payment Savings Methodology
Load payment savings measure the change in total load payments and unhedged load payments pre- and post-Project. Total load payments will include the LBMP payments (energy, congestion and losses) paid by electricity demand (forecasted load, exports, and wheeling). The methodology for calculating the savings is:

Hourly LBMP change (between pre- and post-case) x Hourly Load

REC's/ZEC's Savings Calculation Methodology
RECs and ZECs are financial instruments used to support clean energy goals and comply with carbon emissions regulations. New York State's load-serving entities must purchase these credits from the New York State Energy Research and Development Authority (NYSERDA) every year. The RECs/ZECs savings are the difference in average zonal energy price with and without the Project multiplied by the quantity of renewables and nuclear generator production that would be subject to an index REC and ZEC purchase from NYSERDA. The addition of the CPNY Transmission Project results in an increase in zonal energy prices; therefore, there is a corresponding reduction in Index REC/ZEC, and vice versa. The methodology is as follow:

RECs Savings = Change in LBMP (between pre and post case) in NYISO Zone x Renewable generation in that Zone

ZECs Savings = Change in LBMP (between pre and post case) in NYISO Zone x Nuclear generation in that Zone

For the benefits evaluation, NYPA/GEEC simulated discrete years as follows:

	Lower Bound Scenario	***Upper Bound Scenario***
Contract Case (2030 – 2032)	Modelled 2030 and 2032 with supply as indicated in the Contract case above. Values in between were interpolated. These three years were used to calculate the 3-year present value.	***Same as lower bound scenario***
Policy Case (2033 – 2039)	Modelled with achievement of the CLCPA 70% renewable energy generation target in 2033 and the 9 GW of offshore wind target in 2035. Values post-2035 were escalated for the purpose of a 20-year evaluation to calculate present value.	***Same as lower bound.*** Values post-2035 were escalated to 2039 for the purpose of calculating 7-year present value.
Policy Case (2040 – 2052)	The achievement of a 100% emissions free electric system was NOT used in the calculations. Values post 2035 were escalated to 2052 for the purpose of calculating the present value.	Modelled 2040 with achievement of 100% emissions free electric system. Values post-2040 were escalated for the purpose of a 13-year (to 2052) evaluation to calculate present value.

New York State 100% Zero-Emission Electric System and CPNY Transmission Project Performance

NYPA/GEEC modeled the 2040 system to be 100% zero-emission electric system. The Project's performance in a 100% zero-emissions electric system by 2040 shows the Project to deliver significant production cost savings, load payment savings, and congestion savings.

In NYPA's system modeling, Project utilization is approximately 10-15% in a limited Contract Case; however, that utilization increases to 20-40% in a policy scenario where 70% of electricity is generated from renewable resources and 75%+ in 2040 with a 100% zero emission electric system.

In the 2021-2040 Outlook, the NYISO modelled the two Tier 4 projects to 2040 (assuming achievement of a 100% zero emission electric system by 2040). The NYISO observed utilization of the Project to increase from 14% in 2030 to 83% in 2040.

In the 2021-2040 Outlook, the NYISO refers to the "Road to 2040: Key Takeaways."[8] The Project will be an integral part in addressing the challenges of the following identified Key Takeaways:

Key Takeaway #1 – Significant new resource development will be required to achieve the CLCPA targets. The NYISO estimates installed capacity to meet policy objectives within the State will range between 111 GW to 124 GW by 2040.[9] Without the CPNY Transmission Project, it will be extremely difficult to move the generation of these new renewable resources to load centers and is likely to result in curtailment of upstate resources.

Key Takeaway #2 – To achieve an emissions-free electric grid, DEFRs must be developed and deployed throughout New York.[10] Increased utilization of the Project signals the need to build less DEFRs in the downstate region which can result in significant "avoided costs" of building such DEFRs which are generally high capital cost investments. In addition, while essential to the grid of the future, such DEFR technologies are not commercially viable today and development and construction may extend beyond the critical years to meet the CLCPA targets, while the Project will be in service before these key years.

Key Takeaway #3 – As the energy policies in neighboring regions evolve, the State's energy imports and exports could vary significantly due to changes in neighboring grids.[11] Without the CPNY Transmission Project, New York's downstate region may import more carbon intensive energy rather than moving renewable energy from upstate to downstate. Neighboring states' energy exports may not be emissions-free and, therefore, will hinder New York's ability to achieve its zero emissions electric grid target.

According to the NYISO, due to significant renewable resource additions, new transmission constraints arise across the system as the State approaches achievement of its 2040 CLCPA objective. The NYISO identified three pockets that could benefit from transmission expansion: Finger Lakes, Southern Tier, and Watertown.[12] These areas will need transmission investments to avoid persistent and significant limitations on the deliverability of renewable power. Without the CPNY Transmission Project, these areas will continue to experience limitations at the bulk level since there is not an alternate path to deliver energy across the Central East Interface.

8 NYISO 2021-2040 Outlook, pp. 12-13.

9 Id. at 12.

10 Id.

11 Id. at 13.

12 Id. at 13-14.

RESULTS

GEEC assisted NYPA with the evaluation of the economic and performance benefits of the CPNY Transmission Project based on several key metrics that consider production cost savings, load payment savings, REC/ZEC savings, congestion reduction, utilization of the CPNY Transmission Project, and emission reductions. Hourly resolution production cost simulations were conducted for years 2030–2033 (for the Contract Case) and 2033–2035 (for the Policy Case), and 2040 (100% zero-emission electrics system) with the results summarized in the Table below. Post-2040, the simulation data was escalated by 2% annually with a discount rate of 7.05%

Contract Case Benefits (2030-2032)

Metric	2030	2032	3-Year PV
Production Cost Savings (million $)	$0	$0	$0
Load Payment Savings (million $)	$5.7	$5.0	$10
REC/ZEC Savings (million $)	$0	$1.2	$1
Congestion Reduction on Central East and Total East (million $)	$3	$5	$7
LCR Savings (million $)	$547	$329	$1,400
CO_2 Emissions Reduction (million tons)	78	92	-
NOx Emissions Reduction (tons)	0.01	0.01	-
CPNY Transmission Project Utilization	12%	14%	
Fossil Generation Displaced in NYC (GWh)	63	100	

Policy Case Benefits (2033-2035)

Metric	2033	2035	For Lower Bound 20-Year PV	For Upper Bound 7-Year PV
Production Cost Savings (million $)	$23	$38	$251	$111
Load Payment Savings (million $)	$34	$52	$344	$153
REC/ZEC Savings (million $)	$44	$65	$427	$190
Congestion Reduction on Central East and Total East (million $)	$141	$195	$1,160	$569
LCR Savings (million $)	$325	$416	$2,600	$2,600
CO_2 Emissions Reduction (million tons)	1,230	4,765	-	-
NOx Emissions Reduction (tons)	0.06	0.11	-	-
CPNY Transmission Project Utilization	30%	40%		
Fossil Generation Displaced in NYC (GWh)	342	825		

Policy Case Benefits (2040-2052)

Metric	2040	For Upper Bound 13-Year PV
Production Cost Savings (million $)	$690	$2,308
Load Payment Savings (million $)	$3,390	$11,339
REC/ZEC Savings (million $)	$0	$0
Congestion Reduction on Central East and Total East (million $)	$855	$3,437
LCR Savings (million $)	$0	$0
CO_2 Emissions Reduction (million tons)		-
NOx Emissions Reduction (tons)		-
CPNY Transmission Project Utilization	75%+	
DEFR (Fossil) Generation Displaced in NYC (GWh)	2,207	

CONCLUSION

The study results, as shown in the previous tables, demonstrate that the B/C Ratio for the Project is estimated to be in the range between 1.0 to 3.6. For purpose of calculating the B/C Ratio, we used the following formula:

B/C Ratio = 23-year Present Value of Benefits (Production Cost Savings+ Capacity Savings due to LCR Impact + Load Payment Savings + RECs/ZECs Savings + Congestion Savings) / (Overnight Project Cost x CRF[13])

The B/C Ratio is based on an estimated present-value benefit of $6,200 million (lower bound) to $21,547 million (upper bound), as indicated by the formula above. The estimated cost for the Project is $5,220 million and the capital recovery factor is estimated to be 1.15.[14]

As discussed in this Report, the CPNY Transmission Project offers many benefits in the form of emissions reductions, increased transfer of energy from upstate to downstate, avoided cost of building DEFRs in 2040, less reliance on neighboring state carbon intensive imports into the downstate regions, and bulk power improvements that could prevent curtailment of renewable resources in the 2040 timeframe.

[13] According to the NYISO, the capital recovery factor (CRF) is calculated based on generic figures for a return on investment, federal and state income taxes, property taxes, insurance, fixed O&M, and depreciation (assuming a straight-line 30-year method). See NYISO 2019 Congestion Assessment and Resource Integration Study (issued July 24, 2020) (2019 CARIS Study), p. 54, https://www.nyiso.com/documents/20142/2226108/2019-CARIS-Phase1-Report-Final.pdf/bcf0ab1a-eac2-0cc3-a2d6-6f374309e961?t=1595616909286/. The calculation of the appropriate capital recovery factor and, hence, the B/C Ratio, is based on the first 10 years of the 30-year period, using a discount rate of 7.08% and a carrying charge rate of 15%, yielding a capital cost recovery factor equal to 1.15.

[14] According to NYISO methodology, the total production costs for the NYCA consist of internal NYCA generation costs and the net cost of transactions with New York's neighboring states. See NYISO 2019 CARIS Study, p. 21. Internal generation costs are comprised of fuel, variable operation and maintenance, start-up and emission allowance costs for sulfur oxides, NOx, and CO_2.

ATTACHMENT C

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